

# CALIFORNIA STATE DEPARTMENT OF PUBLIC HEALTH

WALTER M. DICKIE, M.D., Director

## Weekly Bulletin



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GUY P. JONES  
EDITOR

## The Pacific Rattlesnake

By CHARLES T. VORHIES, Entomologist, University of Arizona

Judging from experience on two annual outings with the Sierra Club, a few rattlesnakes are almost certain to be encountered on these trips, arousing uneasiness and fear. It is the purpose of this article to discuss pertinent facts concerning the occurrence, habits, and characteristics of these reptiles, precautions against being bitten and emergency treatment of bites, and to correct some common errors of belief; since more accurate knowledge allays fear and minimizes danger.

Rattlesnakes are the only poisonous snakes of any consequence in California. All other snakes occurring in the state are harmless, if not, as in many cases, distinctly beneficial, and the members of an outdoor organization should be among the leaders in their protection. Snakes are not "slimy," and they are not necessarily "cold," their temperature varying with the immediate environment. There is in fact scarcely any animal cleaner to handle than a snake. Even rattlesnakes are useful destroyers of rodents; but they are sufficiently dangerous to the human race that one can scarcely plead for their conservation.

A number of species and subspecies—i.e., a number of fairly distinct kinds—of rattlesnakes occur within the geographical boundaries of California. Most of them are found only in the warmer and dryer regions, some only in the "desert" localities, while but a single

one occurs in the northern part of the state and in the Sierra Nevada proper. This is the Pacific Rattlesnake. It has been long known to science as *Crotalus oreganus*; but more recently as a result of the careful studies of L. M. Klauber of San Diego, it has been shown to be a variety, or subspecies, of the widespread Prairies Rattlesnake, and accordingly is designated by him as *Crotalus confluentus oreganus*. It may still be called the Pacific Rattlesnake, and it "occupies all parts of California except the Colorado and Mojave deserts—from sea-level up at least to an altitude of 8600 feet in the Sierra Nevada." I believe but few, however, are found in the Sierra Nevada above 8000, though an occasional stray individual may occur up to as much as 9000 feet in favorable locations, such as southerly exposures. In San Diego County, Klauber says, it occurs on the tops of the highest peaks. One was killed by members of the 1931 outing party at the edge of the meadow just below the Neall Lake Camp of that year. A party of more than 200 persons is almost certain to find some in areas visited below 8000 feet. Pate Valley seems to be a rather favorable locality.

This species may be designated as moderately large, possibly, though not commonly, up to five feet in length. A mature specimen is not thick-bodied in proportion to its length, a recorded forty-two-inch individual being four inches in circumference. It



is rather dark in general coloration, with a well-marked diamond pattern on the body, and with yellow, olive-green, brown, or gray ground coloration.

While a rattler of the size attained by the Pacific Rattlesnake must be accounted a dangerous reptile, an inventory of its characteristics contains much that is reassuring to the cool-headed mountaineer capable of intelligent thinking. It is well, first of all, to realize that rattlesnakes are never hunting humans—they do not hunt trouble. While they seem to place some reliance in their powers of defense, and thus in some instances stand their ground if disturbed, they do not show the calm indifference of the skunk to threatened danger, but generally seek safety in retreat. The act of striking is often, if not usually, a reaction of fear rather than of anger or pure viciousness. In fact, an ordinary harmless racer almost invariably puts up a wilder and apparently more vicious fight than a rattler. While general statements are difficult to make, because there are both specific and individual differences in rattlesnakes, the species under discussion is not the most excitable or dangerous. That distinction seems to belong to the Desert Diamond Rattlesnake (*Crotalus atrox*), of Texas, Arizona, and the deserts of southeastern California. The Pacific Rattlesnake in southern California is given credit for a very inoffensive disposition by Dr. Joseph Grinnell, who says: "In all our experience the rattlers of this region proved to be mild-mannered and inoffensive, seeking to make their escape in every instance, and only striking when worried to the last degree. Neither myself nor my companions had any 'narrow escapes' from being bitten that we were aware of." The following excellent advice from the same source as the above quotation may well be thoughtfully considered by outing enthusiasts: "There are lots of interesting things to be learned about rattlesnakes in their native haunts, and we would urge students having the opportunity to avail themselves of it by finding out everything possible. The only danger we can conceive of, that when a rattler is stepped upon unawares, is past as soon as you have caught sight of the reptile. You are at once on your guard. Retain your common sense. Don't go into hysterics and think you must batter the snake to death at once. For it won't run after you! Exercise reasonable caution, give your curiosity full sway, and see what you can find out."

Rattlers are popularly supposed to seek out exposed situations, where they may bask for hours in the sun, and yet those club members who were in Pate Valley in 1931 will remember that one was killed there by only a few minutes exposure to the midday sun on a sandy area. The fact is that rattlesnakes are pri-

marily nocturnal, or at least crepuscular, especially during the warmest months of the year. At these times they lie in shaded situations during the hottest period of the day, avoiding bare earth and exposed rock, where the accumulated heat would soon be fatal. In spring and autumn, on the other hand, when the nights are too cold for activity, they warm themselves by day on sand or rocks in more or less exposed places, where they can withdraw to partial shade if the heat becomes too great. It is in cool periods therefore that mountaineers need to exercise the most care in hiking or climbing steep grades or more precipitous rocks where the danger of placing a hand on a rattler, or of meeting one literally "face to face," is greatest.

There is but little danger in hiking over level ground, or up slopes on which the hands need not be used to assist, so long as the hiker has even an ordinary amount of clothing on the lower limbs. The usual height at which the strike lands, from level ground, is about ankle to army shoe-top height. Therefore, oxfords or low sneakers afford but little protection. Basketball shoes give a small measure of protection, army or other leather shoes of that height considerably more. Canvas leggings offer additional safety, while fourteen-inch boots are practically completely safe, and leather puttees are as so much armor plate where the rattler is concerned. Perhaps no better evidence of the comparative lack of danger from rattlers is needed than the impunity with which so many of our hikers go about in shorts or bathing suits. The writer, after living many years in rattlesnake territory without ever having been struck at, still prefers the feeling of safety which comes from the wearing of leather boots or shoes.

Many are the stories which go the rounds as to these (and other) reptiles crawling into campers' beds, occupied or unoccupied, but this writer has yet to authenticate any such case, and he has spent many a night on the ground in the country of the rattlesnake. A friend who was a member of a Sierra Club annual outing some years ago tells of a rattlesnake being found in boughs placed beneath the bed of certain members of the party. Happily, such cases must be rare. If perchance you have heard that a horse-hair rope placed on the ground so as to encircle the bed is a protection against rattlers, you may as well know that it is futile. A rattlesnake will crawl right over such a barrier—and why not? It can crawl with impunity across a barrier of cactus.

Rattlesnakes are often found at rest in a nice neat coil, and so are popularly reported to have been "coiled to strike." That this is far from the truth may be readily demonstrated if only a little calm



observation is made to replace hysteria. Disturb one rudely and the first thing it does is to rapidly unloose these coils, quickly assuming a posture which will be readily recognized as a fighting pose. If really angry or excited, the anterior one-third of the body is reared somewhat above the ground and bent into sharp but graceful curves like a letter "S," or a succession of them—that each bend is in the opposite direction from the one before or behind. If reared high, and very threatening, the head and neck may be tilted downward again from a higher curve farther back. The tongue plays in and out, and the rattle sounds a once-heard-never-forgotten buzz. The rattle may be within the curves and loops, or readily visible somewhere outside them. The posterior two-thirds of the body will be seen to be in coils or loops forming a firm base of support from which to launch the strike. A short stroke can be quickly made from almost any position by drawing the head back a bit, but the longest and most effective strike is doubtless that from the position described.

Now, a rattlesnake can not leap, and can not strike its own length. Its most effective stroke is the shortest, both the power that goes into it and the accuracy of aim diminishing with distance. One-third of its own length is about the greatest reasonably effective range, and certainly beyond half its length lies safety. Therefore you do not need a "ten-foot pole" with which to kill, or experiment with, a rattler.

In a recent story in a popular weekly magazine a well-known writer drew for his readers a word-picture of a vicious brute of a rattlesnake, coiled ready for action, its head swinging from side to side, mouth wide open, and hissing venomously. In fact (and the writer hopes the reader will verify this at the next opportunity), the head swings only so much as is necessary to keep a watchful eye on the moving object which engages its attention. The rattlesnake *never* opens its mouth before launching the strike and the writer has never heard this kind of snake hiss. Of course, the hero of the story "blew off" the head of this dragon with his trusty six-shooter in spite of its active movements.

The "bite" of the rattlesnake is a combination of acts which takes place with astonishing speed, often too fast for the eye to follow. As the head moves forward the mouth is opened widely, an action which erects the fangs from their resting position against the roof of the mouth so that they point forward. The jaws are capable of opening until the lower jaw almost forms a line with the upper, instead of an acute or even obtuse angle. The forward-pointing fangs thus literally stab the victim, and are partially imbedded if the aim be accurate. A convulsive clos-

ing movement or "bite" instantly follows, and is, usually, as quickly released. But this biting movement compresses by muscular action the venom glands of the upper jaw, and portions of venom pass along the ducts to the bases of the hollow fangs and through the fangs into the wound, exactly as a hypodermic injection is made. Nature gave the rattlesnake a hypodermic needle long before man invented it. Removal of the fangs renders a rattlesnake comparatively harmless, but only temporarily. New fangs in a short time move into position to replace those extracted, a provision of nature to care for the losses which normally occur in striking prey. There is no method of removal of the poison glands. To take them out by an operation would nearly destroy the sides of the head.

(Continued next week)

The modern dietitian allows us to eat about what we will provided the vitamins are not excluded. Similar counsel may be given to the lover of books. Read what you like—newspapers and magazines, the novel and biography, history and technical books—but include somewhere in your reading regimen the vitamins of poetry, essays, and the drama.—U. C. Extension Division.

Pasteurization does not interfere with the food value of milk. It is true that overheating may throw out a small amount of casein and mineral salts, but this is negligible. The only important effect of pasteurization on the food value is the destruction of vitamin C, but since milk originally does not contain enough vitamin C for an adequate supply, tomato juice and orange juice must be given to babies.

To live in the temper and spirit of a learner, open-minded, unwarped in judgment, free as far as light permits from delusions, eager to explore and inquire, quick to give up a confuted idea and so gain a higher outlook, striving steadily to improve and to grow—these are watchwords of the intellectual life.—U. C. Extension Division.

Nothing is more important for many people to know than that heart disease does not kill people suddenly as a rule—these instances merely stand out as spectacular examples—most cases respond favorably to moderate living and justify an optimistic outlook on life. Rest, exercise, occupation, diet—all need attention and skilled regulation.

Good education is not a by-product of listless living.—U. C. Extension Division.



## MORBIDITY

Complete Reports for Following Diseases for Week Ending  
June 13, 1936

## Chickenpox

374 cases: Alameda County 3, Alameda 3, Berkeley 5, Oakland 29, Piedmont 9, Martinez 1, Fresno County 1, Fresno 7, Humboldt County 1, Kern County 2, Los Angeles County 36, Alhambra 2, Burbank 10, Culver City 2, Glendale 6, Huntington Park 2, Long Beach 6, Los Angeles 34, Pasadena 3, Pomona 1, San Gabriel 3, Santa Monica 1, South Gate 5, Madera 1, San Rafael 2, Gustine 2, Monterey County 2, Monterey 2, Calistoga 1, Nevada County 1, Orange County 22, Anaheim 15, Fullerton 1, Huntington Beach 1, Orange 8, Placentia 1, Tustin 3, Colfax 5, Lincoln 40, Sacramento 6, San Bernardino 1, San Diego County 10, National City 3, San Diego 20, San Francisco 15, San Joaquin County 4, Manteca 1, Stockton 7, San Luis Obispo County 3, Santa Barbara County 3, Santa Barbara 8, Palo Alto 8, San Jose 2, Etna 1, Ventura County 3.

## Diphtheria

29 cases: Oakland 3, Imperial County 1, El Centro 2, Los Angeles County 1, Los Angeles 9, Bell 1, Monterey County 1, Santa Ana 2, Sacramento 1, San Francisco 1, Stockton 1, San Mateo County 1, Santa Barbara 2, Santa Clara County 1, Sutter County 2.

## German Measles

208 cases: Alameda 6, Berkeley 28, Emeryville 3, Oakland 25, Piedmont 14, San Leandro 2, Pittsburg 2, Fresno County 5, Los Angeles County 1, Claremont 1, Long Beach 8, Los Angeles 7, Pasadena 2, Madera 1, San Rafael 3, Monterey County 6, Orange County 1, Anaheim 1, Orange 2, Santa Ana 7, Colfax 2, Lincoln 1, Riverside County 1, Riverside 9, Sacramento 1, National City 3, Oceanside 1, San Diego 3, San Francisco 38, San Joaquin County 4, Stockton 10, San Luis Obispo County 1, Paso Robles 1, San Luis Obispo 1, Burlingame 1, San Carlos 2, Santa Barbara 3, Santa Clara County 1.

## Influenza

412 cases: Kern County 165, Los Angeles County 3, Huntington Park 1, Long Beach 1, Los Angeles 6, Madera County 21, Nevada County 7, Colfax 1, Lincoln 134, Sacramento County 2, San Diego 1, Fairfield 51, Tulare County 19.

## Malaria

2 cases: Sacramento 1, Marysville 1.

## Measles

1343 cases: Alameda County 1, Alameda 6, Berkeley 33, Emeryville 8, Livermore 1, Oakland 58, San Leandro 3, Butte County 2, Calaveras County 1, Contra Costa County 3, Pinole 3, Pittsburg 9, Richmond 1, Fresno County 9, Fresno 12, Humboldt County 3, El Centro 1, Kern County 58, Bakersfield 1, Los Angeles County 125, Alhambra 24, Arcadia 4, Azusa 8, Beverly Hills 5, Burbank 4, Claremont 1, Compton 17, El Monte 2, Glendale 21, Glendora 1, Hermosa 1, Huntington Park 5, La Verne 1, Long Beach 5, Los Angeles 164, Monrovia 1, Pasadena 37, Pomona 22, Redondo 2, San Fernando 4, San Gabriel 1, San Marino 2, Santa Monica 11, Sierra Madre 2, South Pasadena 7, Whittier 6, Torrance 3, Lynwood 12, Hawthorne 1, South Gate 10, Monterey Park 15, Gardena 1, Madera County 21, Mill Valley 5, Ross 2, San Rafael 6, Merced County 2, Gustine 2, Monterey County 2, King City 1, Napa County 1, Orange County 32, Newport Beach 2, Orange 1, Laguna Beach 2, Tustin 6, Colfax 1, Lincoln 19, Riverside County 4, Corona 1, Riverside 35, Sacramento County 29, San Bernardino County 9, Ontario 5, Redlands 8, San Bernardino 5, San Diego County 102, Coronado 3, Escondido 1, National City 1, Oceanside 26, San Diego 34, San Francisco 88, San Luis Obispo County 27, San Luis Obispo 21, San Mateo County 24, Burlingame 13, Daly City 1, Redwood City 14, San Mateo 3, South San Francisco 3, Santa Barbara County 3, Santa Barbara 1, Santa Maria 10, San Jose 5, Willow Glen 1, Shasta County 1, Benicia 1, Vacaville 1, Vallejo 1, Healdsburg 1, Turlock 2, Sutter County 2, Red Bluff 4, Tuolumne County 2, Ventura County 2, Fillmore 1, Ventura 2, Woodland 1, Yuba County 1, Marysville 1.

## Mumps

556 cases: Berkeley 1, Oakland 14, Piedmont 1, San Leandro 1, Butte County 4, Contra Costa County 8, Hercules 2, Richmond 1, Placerville 1, Fresno County 10, Fresno 7, Kern County 6, Los Angeles County 52, Alhambra 14, Arcadia 1, Beverly Hills 14, Burbank 1, Compton 1, Glendale 2, Huntington Park 3, Long Beach 26, Los Angeles 42, Pasadena 17, Pomona 21, San Marino 1, Santa Monica 4, South Pasadena 2, Whittier 6, Torrance 1, Lynwood 2, South Gate 3, Monterey Park 14, Yosemite National Park 1, Modoc County 1, Orange County 10, Anaheim 5, Brea 5, Fullerton 1, Newport Beach 2, Santa Ana 10, Seal Beach 1, Colfax 3, Lincoln 6, Riverside County 4, Corona 1, Riverside 5, Sacramento County 12, Sacramento 28, Ontario 9, San Bernardino 2, San Diego County 12, Escondido 1, National City 9, Oceanside 1, San Diego 39, San Joaquin County 5, Stockton 1, Tracy 2, San Mateo County 1, San Jose 5, Benicia 1, Fairfield 5, Vallejo 2, Stanislaus County 2, Oakdale 1, Patterson 70, Tulare 1, Ventura County 5, Ventura 4.

## Pneumonia (Lobar)

55 cases: Oakland 4, Los Angeles County 4, Claremont 1, Glendale 1, Los Angeles 25, Monrovia 1, Santa Monica 3, Sierra Madre 1, Modoc County 1, Orange County 1, La Habra 2, Riverside County 1, Riverside 2, San Diego 1, San Francisco 3, Santa Barbara 1, Santa Maria 1, Oxnard 1, Ventura 1.

## Scarlet Fever

295 cases: Alameda County 2, Alameda 2, Berkeley 4, Livermore 1, Oakland 19, San Leandro 2, Butte County 2, Chico 4, Colusa 5, Contra Costa County 2, Richmond 1, Fresno County 2, Fresno 4, Humboldt County 1, Imperial County 1, El Centro 1, Kern County 10, Kings County 1, Los Angeles County 8, El Monte 1, Glendale 3, Huntington Park 1, Long Beach 4, Los Angeles 44, Pasadena 3, Redondo 1, Santa Monica 2, Hawthorne 1, Madera County 1, Merced 1, Modoc County 3, Salinas 1, Orange County 2, Laguna Beach 1, Placer County 3, Riverside 2, Sacramento County 2, Sacramento 21, San Bernardino County 1, San Diego County 5, San Diego 2, San Francisco 75, San Joaquin County 1, Stockton 2, Tracy 1, San Mateo County 3, Daly City 2, South San Francisco 6, Santa Barbara 2, Santa Clara County 3, Palo Alto 4, San Jose 5, Stanislaus County 1, Oakdale 2, Turlock 1, Red Bluff 1, Lindsay 1, Ventura County 3, Santa Paula 1, Ventura 1, Yuba County 1, Marysville 2.

## Smallpox

No cases reported.

## Typhoid Fever

12 cases: Berkeley 1, Imperial County 2, Long Beach 2, Los Angeles 1, Salinas 1, Sacramento County 3, Fairfield 1, California 1.\*

## Whooping Cough

445 cases: Alameda 3, Berkeley 33, Oakland 11, San Leandro 8, Hercules 1, Richmond 2, Fresno County 10, Fresno 5, Imperial County 1, Westmoreland 1, Kern County 20, Taft 3, Kings County 1, Los Angeles County 22, Alhambra 3, Beverly Hills 2, Compton 4, Glendale 3, Huntington Park 3, Long Beach 14, Los Angeles 66, Montebello 1, Pasadena 15, Pomona 3, Santa Monica 1, Whittier 1, Torrance 2, South Gate 3, Gardena 1, Mariposa County 7, Gustine 2, Monterey County 1, King City 1, Orange County 12, Brea 1, Fullerton 1, Santa Ana 7, Placentia 4, Tustin 2, Lincoln 1, Riverside 1, Sacramento County 1, Sacramento 25, San Bernardino County 3, San Bernardino 1, San Diego County 31, La Mesa 2, Oceanside 8, San Diego 37, San Francisco 15, San Joaquin County 11, Lodi 1, Manteca 4, Stockton 5, Paso Robles 1, Santa Barbara 5, Santa Maria 1, San Jose 3, Oakdale 3, Ventura County 3, Fillmore 2.

## Meningitis (Epidemic)

7 cases: Berkeley 1, Oakland 1, Fresno County 1, Long Beach 1, Los Angeles 3.

## Dysentery (Amoebic)

One case: Los Angeles.

## Dysentery (Bacillary)

2 cases: Kern County 1, Orange 1.

## Pellagra

4 cases: San Bernardino County 2, San Francisco 2.

## Poliomyelitis

2 cases: Los Angeles 1, San Diego 1.

## Tetanus

4 cases: Los Angeles County 1, Los Angeles 1, Riverside County 1, San Francisco 1.

## Trachoma

4 cases: Los Angeles County 1, Santa Ana 3.

## Paratyphoid Fever

2 cases: Los Angeles.

## Rocky Mountain Spotted Fever

One case: California.\*

## Trichinosis

One case: San Francisco

## Food Poisoning

21 cases: Hayward 6, Los Angeles 3, Orange County 1, San Francisco 11.

## Undulant Fever

One case: Los Angeles.

## Coccidioid Granuloma

One case: Ventura County.

## Septic Sore Throat (Epidemic)

4 cases: Kern County 1, San Diego 1, San Francisco 1, Burlingame 1.

## Rabies (Animal)

24 cases: Berkeley 2, Los Angeles County 6, Compton 1, El Segundo 1, Los Angeles 9, Torrance 1, Madera 1, Stockton 3.

\* Cases charged to "California" represent patients ill before entering the state or those who contracted their illness traveling about the state throughout the incubation period of the disease. These cases are not chargeable to any one locality.